

To: Steve Potts/DC/USEPA/US@EPA[]
From: "Suplee, Mike"
Sent: Tue 2/19/2008 5:22:28 PM
Subject: Some thoughts/issues on implementing numeric nutrient standards
MasterNutCriteriaPlan_v3.doc

Hi Steve;

As you know, Montana is continuing to move forward with the adoption of numeric nutrient criteria. Briefly, our plan, at present, is to produce a white paper outlining the technical and scientific basis of the criteria we've developed for wadable streams and rivers. To be ready around July this year, the paper would be reviewed by an independent academic committee for its validity. Assuming this goes well and the basis of our criteria is considered sound, we would continue to work on policy issues that need resolution before moving to rule making.

Per the policy issues, attached is a brief that has also been provided to EPA Region VIII Standards. It outlines some issues that MT DEQ has identified as potential stumbling blocks for adopting criteria, and that may require a stated EPA policy. The flowchart represents an approach we think MIGHT work -but note that it is still draft. (If viewed on your computer screen, you need to view it in 'print layout' or the flowchart looks like spaghetti.)

Since any criteria we adopt need ultimately to be approved by Regional as well as National EPA, I thought a heads-up of what we are considering would be useful for you. Please let me know if you have any questions, or would like to discuss these concepts further.

Sincerely,

Michael Suplee, Ph.D.
Water Quality Standards Section
Montana Department of Environmental Quality

Outline of Issues Needing Resolution by EPA in Regards to the Adoption and Implementation of Statewide, Water-Quality Based Numeric Nutrient Criteria

I. Background

The Montana Department of Environmental Quality has been developing statewide numeric nutrient criteria for the past 8 years. Through this work, the Department has developed ecoregion-specific nutrient criteria for wadable streams and small rivers of the state. The work has reached the point that the Department believes the technical, scientific basis of the criteria is sufficiently developed that initial steps towards rule making and adoption can begin. One of the key findings of the work has been that nutrient concentrations that protect beneficial water uses are generally quite low relative to waste-water treatment technologies currently available. For example, one of the least stringent of the total nitrogen criteria is about 50% lower than best practicable wastewater treatment technologies can currently meet.

The Department believes that, in the long run, the criteria can be met by a combination of non-point source improvements and increasingly superior (and cost-effective) waste-water treatment technologies. But at present, most of the numeric nutrient criteria concentrations are low and the ability to meet them end-of-pipe by point source dischargers is difficult, so the Department is considering (among other things) the use of point-source variances as a companion implementation procedure option for the standards. Federal law (40 CFR 131.10 {g} {6}; 40 CFR 131.13) allows for variances from water-quality standards based on the economic impacts of meeting the standards and, similarly, state law (MCA 75-5-301 {2} {a}) requires consideration of the economics of waste treatment when setting water quality standards. The Department has developed a draft flowchart (presented below) outlining the implementation process envisioned; variances are an important part of this process. In the flowchart are concepts that will need careful consideration — and a stated policy or opinion — by EPA, if numeric nutrient standards are to move forward; the specific points the Department believes EPA needs to address are detailed next in section II Problem Statement.

II. Problem Statement

There are 3 major areas of the outlined process for which DEQ believes EPA needs to provide an opinion or policy. First, the implementation process could result in a significant number of point-source variances from the water-quality based standards due to substantial and widespread economic impacts; we're thinking possibly several a year. This perhaps is not exactly in keeping with EPA region VIII's view that is it important to "limit application of variances to an appropriately small universe of degraded waters, and to evaluate fully other alternatives prior to adoption of variances" (EPA memo 8EPR-EP from Dave Moon to Abe Horpestad {MT DEQ}, September 19, 1996). "Other alternatives" are certainly part of the flowchart; nevertheless, if a significant number of variances were to result, how would EPA react to this?

The second area needing clarification is in regards to the timeframe for determining if a nutrient water-quality problem is "temporary and correctable". Ideally,

if a point-source variance were put in place it would be allowed (if justifiable) for about a 20 year period, the generally-accepted lifespan of a new or upgraded wastewater treatment facility. Generally, only at the end of the 20 year period would the possibility of removing or downgrading beneficial uses be pursued, if the water quality problem is unresolved. Is EPA comfortable with this timeframe? Please refer to footnote 3 for more details on the Department's ideas in this area, and to the above cited EPA memo (8EPR-EP). Consider also that refinements to the criteria will also occur during this 20 year timeframe.

Third, is there a possibility that best practicable treatment technologies could be considered "acceptable", even if they do not result in meeting the instream criteria but do represent the best that technology can currently offer (short of unreasonable and extremely expensive treatment technologies). This concept is presented in the flowchart below in Box 13 and is, from the Department's perspective, *terra incognita*. It is assumed in this scenario that "best practicable treatment technologies" would exceed current requirements for secondary treatment per 40 CFR 133 (and updates). And if this approach were taken, how would we best assure a community that has financed and built a treatment facility to "best practicable treatment technology" that they will remain in compliance with the standards and their permit, if the instream criteria are still not met?

III. Process Flowchart

Outlined below is the draft flowchart detailing the process. As this flowchart is reviewed, it should be considered from the perspective that ecoregionally-stratified, water-quality based numeric nutrient criteria have been or are intended to be adopted into standards. Since the flowchart is draft it is open for comment, modification and update. The Department's goal is to assure that the numeric nutrient standards implementation procedures ultimately developed are workable in a real-world regulatory setting where point sources are part of the watershed and part of the applicable TMDL.

February 13, 2008

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For this process to operate (1) the BER would need to have all necessary statutory authority to allow variances from numeric nutrient criteria based on economic hardship; and (2) rules would need to be adopted for numeric nutrient criteria and associated implementation procedures. In the flowchart, activities to be carried out are in *italics*, questions to be answered are in normal font style.

1. *Stream receiving point-source discharge is reviewed relative to statewide numeric nutrient criteria. This comes about due to:*

- A. 5-year permit review*
- B. Lack of capacity, requiring a waste-water system upgrade*
- C. Aging waste-water system*
- D. Violating current permit*
- E. TMDL*
- F. Other case-specific reasons*

2. Is the waterbody a high-quality water for nutrient (i.e., are its current N and P concentrations \leq the applicable, seasonal/ecoregional criteria *and* benthic algae levels are below recommended levels)?

No

Yes

3. *Determine if elevated N & P concentrations or algae levels are naturally high due to **reasonably** operated dams or other hydrologic modifications (per MCA 75-5-306)¹. Near-field effect of upstream natural lakes & wetlands can also be considered, as the criteria sometimes don't account for such effects.*

Are the N & P concentrations and algae levels naturally elevated due to the factors above?

No

Yes

Carry out nondegradation analysis. Go to page 6 of this document.

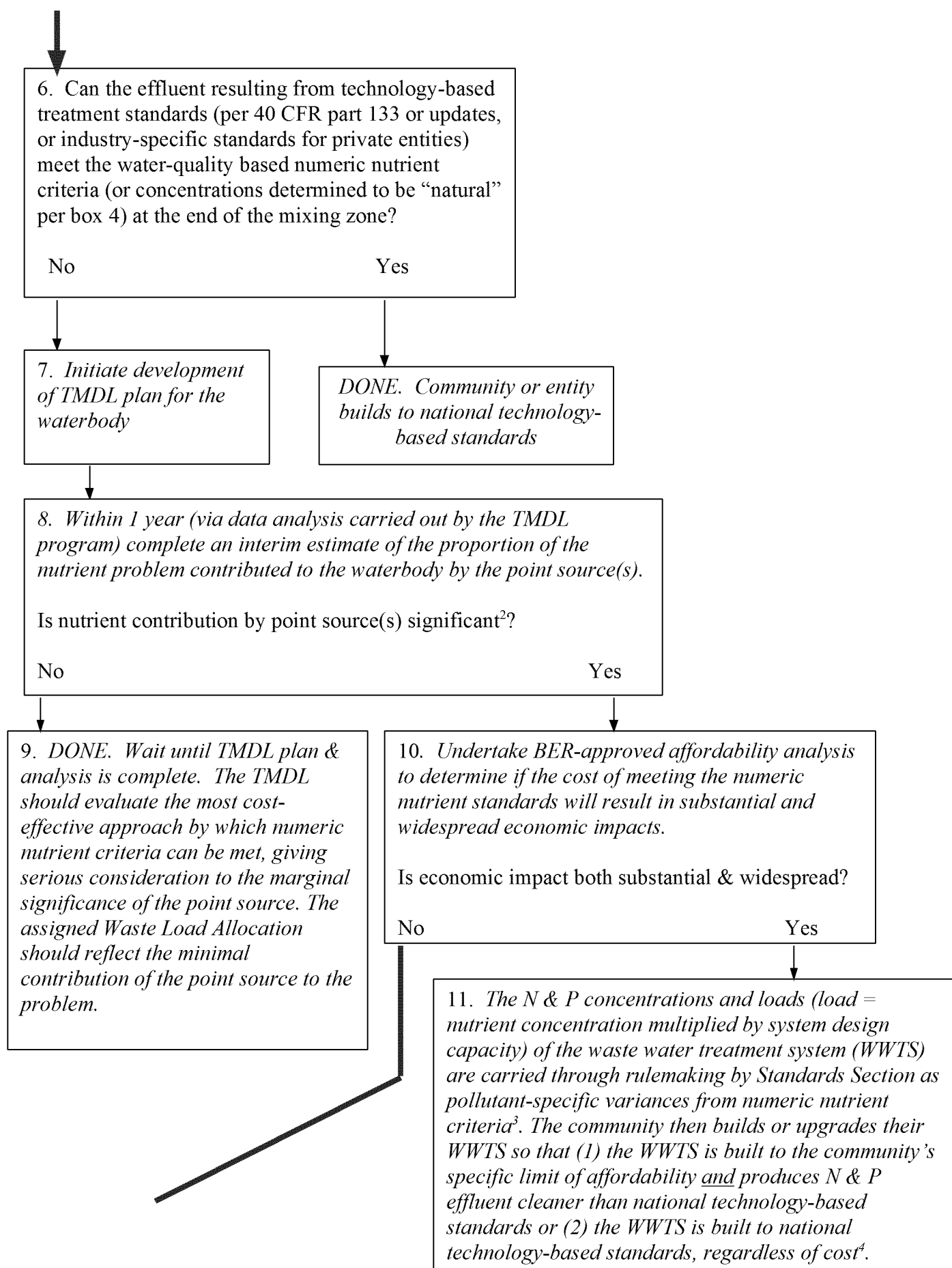
5. Is the TMDL plan completed for the waterbody?

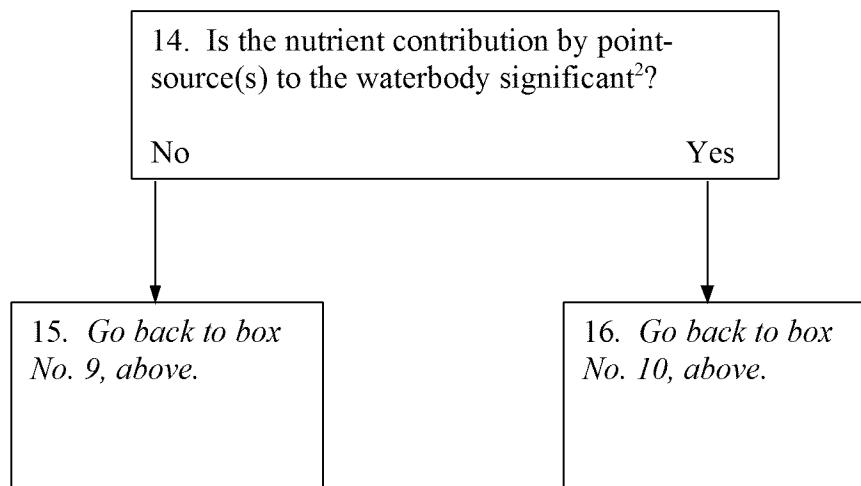
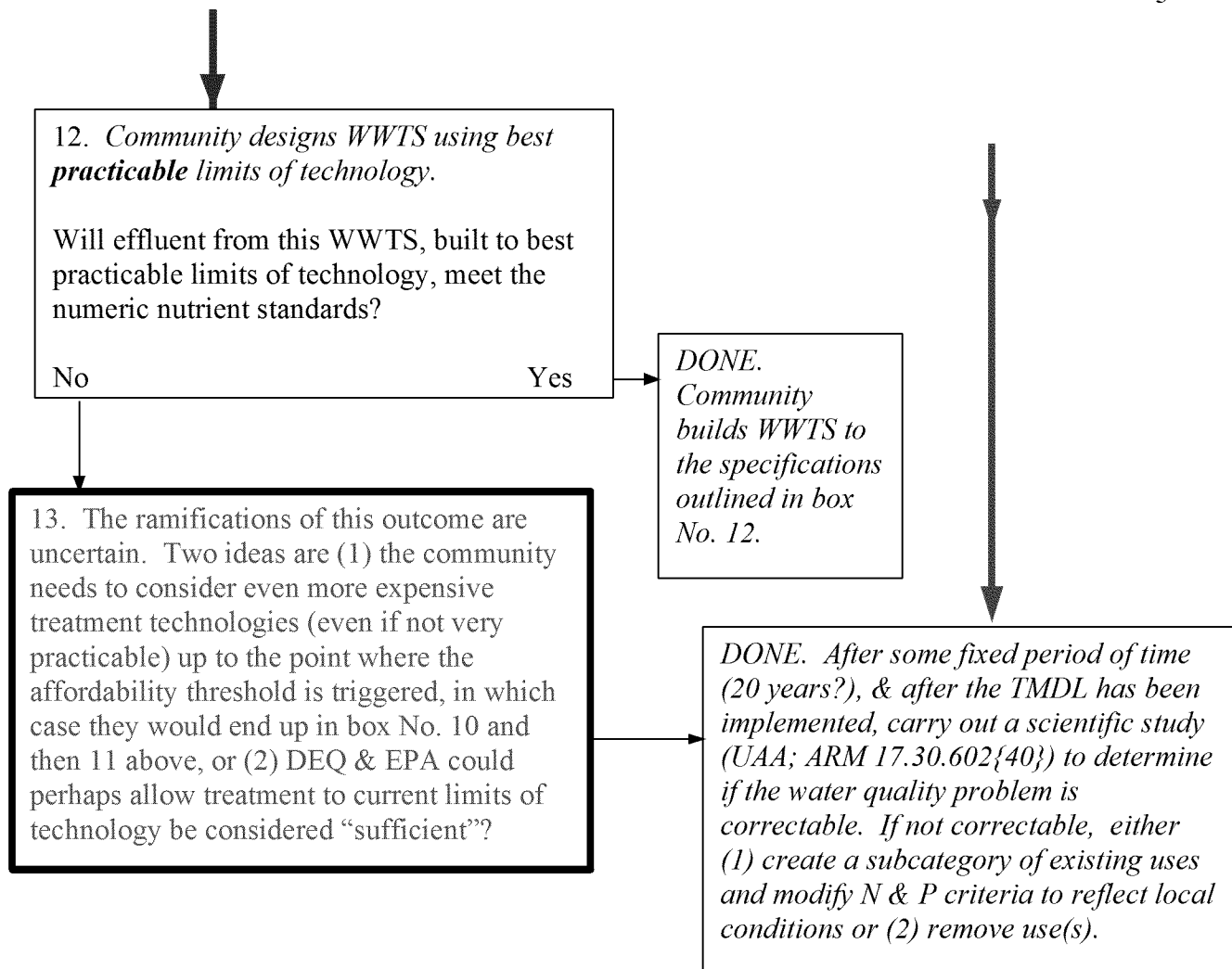
No

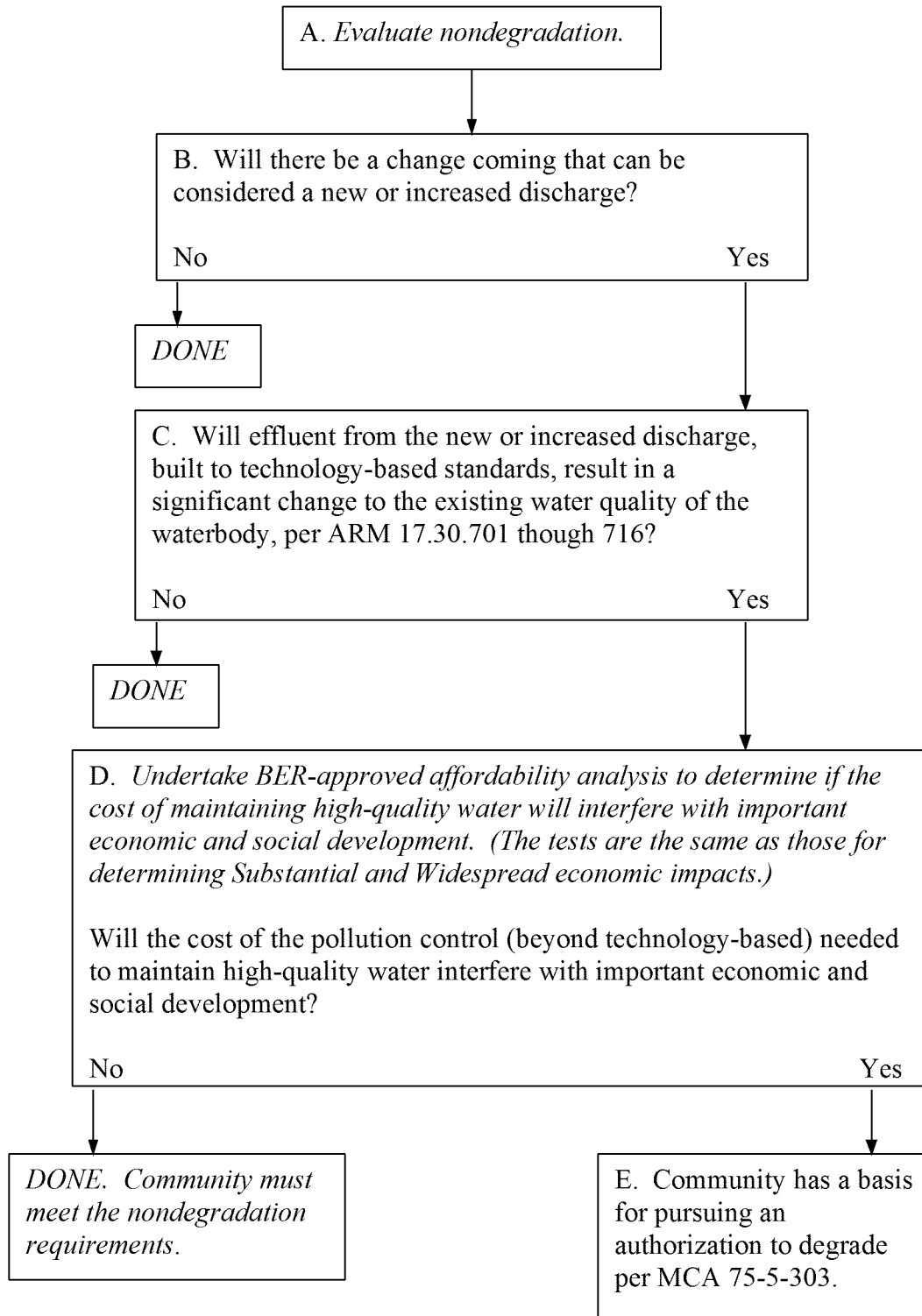
Yes

4. *Not necessary to treat to purer than natural (MCA 75-5-306). The "natural" nutrient concentrations and benthic algae levels/biological conditions can be incorporated in to the TMDL and permits.*

Go to Box No. 14 on page 5, below.







 FOOTNOTES

¹ A determination as to whether the dam is being reasonably operated would have to be carried out. Per MCA 75-5-306, “natural” also refers to conditions or materials present in runoff or percolation over which man has no control or from developed land where all reasonable land, soil & water conservation practices have been applied. Except for conditions resulting from the hydrologic affects outlined in box No. 3, streams in a *truly* natural state should generally have nutrient concentrations \leq the numeric nutrient standards because the standards themselves have been calibrated to local reference conditions. See Suplee et al. (2005) for details on selection of reference streams. The reasonable land, soil & water conservation component of this statute will by default be determined & established via each TMDL, and completion of the TMDL is integral to all subsequent aspects of this flowchart.

² DEQ (in collaboration with EPA) will have to determine what proportion of a nutrient problem in a waterbody can be considered “significant”. A point at which to begin this conversation could be “5% or more”.

³ EPA requires that variances be re-justified every 3 years, and may be extended where justifiable. One requirement of an extension is that reasonable progress towards achieving the standard has been achieved including progress towards developing and implementing the TMDL (see 1996 EPA memo from David Moon to Abe Horpestad et al.). In the same memo EPA also recognizes that in other states a 20 year timeframe has been used to determine whether a given water quality problem is temporary and correctable.

The TMDL plan can be completed either before or after the variance in box No. 11 is adopted into rule. The flowchart process outlined here assumes a 20 year timeframe to conclude if the water quality problem is correctable. This conclusion would rely heavily on progress made though implementation of the TMDL; reasonable progress in implementing the TMDL would provide justification for variance extensions, which could be granted for up to 20 years or until a variance discharge load cap is reached, whichever comes first. After 20 years a major evaluation of the success of the TMDL would have to be undertaken. If, based on this evaluation and the current technologies & their associated costs, the pollution problem is not correctable, then go to box No. 4.

⁴ In could result that technology-based standards may cost **more** than the affordability threshold would allow, in which case the technology-based standards must be met at a minimum. This could be especially true if EPA updates the national secondary treatment standards, which they are considering.